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August 15, 1994

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Re: PR Docket No. 93-61
Written *Ex Parte* Presentation

Dear Mr. Caton:

Itron, Inc. ("Itron") submitted comments in the above-referenced proceeding at the request of Mr. Richard Engelman, Chief Technical Standards Branch, FCC Office of Engineering and Technology. Accordingly, in accordance with Section 1.1206(a)(3) of the Commission's Rules, we hereby submit with this notice two (2) copies of Itron's comments.

If there are any questions in this regard, please contact the undersigned.

Sincerely,

Henrietta Wright

Attachments

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August 12, 1994

Mr. Richard B. Engelman
Office of Engineering and Technology
Federal Communications Commission
2025 M Street, N.W., Room 7122-B
Washington, D.C. 20554

Re: PR Docket No. 93-61

Dear Mr. Engelman:

Pursuant to a telephone conversation with you and Mr. Ron Netro, of the Private Radio Bureau, I am responding, on behalf of Itron, Inc., to various aspects of a staff proposal that is intended to accommodate the proposed new Location and Monitoring Service ("LMS") with the existing and developing Part 15 usage of the 902-928 MHz frequencies. Itron, as you know, is the worldwide leader in providing RF-based, automatic meter reading ("AMR") systems for use by gas and electric utilities and has almost three million meter transponders operating as unlicensed Part 15 devices. A significant number of utilities have made substantial investments in the Itron Part 15 AMR systems.

Before discussing the specifics of your proposal, it is necessary to reiterate that Part 15 use and the proposed expanded LMS service in the 902-928 MHz band are technically incompatible. It is also important to note that current Part 15 use of the band is extensive, whereas the LMS service is new and undeveloped and even the existing wideband AVM systems are largely undeployed.

Itron's reaction to the current FCC proposal focuses on the potential for future degradation of its service. Under the band segmentation and interference "thresholds" you have proposed, Itron does not believe that its transmitters will cause interference to LMS systems, either multilateration or non-multilateration. There is, however, a serious threat of interference to Itron (and other Part 15 devices) from LMS systems, which is not addressed at all in your proposal and which requires additional analysis

and discussion on the record of this proceeding.[1] Furthermore, various aspects of the staff's proposed band segmentation plan affect the extent of potential interference from LMS to Part 15 use, and cannot be decided separately from the interference question itself—the two are inextricably linked.

Potential Interference From Non-Multilateration Systems

Itron currently operates between 910-920 MHz, which the FCC staff proposes for use by non-multilateration systems. Thus, it is important to define exactly what is considered a non-multilateration system. Itron does not have interference problems from the tag-reader technology, that is currently the only other "AVM" technology that is non-multilateration. If the Commission sets forth operating specifications intended to allow tag-readers to continue to use the designated parts of the band, it will greatly reduce the potential for interference to Part 15 devices in those portions of the band.

Because tag-readers require a near-continuous transmission in order to be able to identify correctly a tag on a fast-moving vehicle, both the power level, and the locations allowed must be carefully limited. Hence, allowing power levels up to 300 watts and 6 MHz bandwidth, as proposed in the NPRM at ¶ 30, is clearly not feasible. Fortunately, a typical tag-reader system, such as Amtech's, can operate well limited to 30 watts power at 10 meters antenna height, in fixed positions in the immediate vicinity of highway toll plazas, rail sidings, and other rights-of way.[2] The interrogator transmission is 20 kHz, and the tag response transmission is 2.5 MHz in bandwidth. Itron may find that it has to develop a modified meter reader to use in close proximity to tag-reader locations, but that is at least a future problem of foreseeable magnitude.

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[1] Itron's power is extremely low, a quarter-milliwatt. This power level is determined by the necessary battery life to make utility installation economically feasible, and battery use in turn is dictated by the safety factors inherent in placement of the meter modules on gas meters.

[2] Amtech in its comments in this proceeding has endorsed such limits. Comments of Amtech Corp., PR Docket No. 93-61 (June 29, 1993) at 17.

Potential Interference From New LMS Multilateration Systems

Itron has not received interference from the current AVM multilateration technology because AVMs current deployment is, for all intents and purposes, limited to one company, Teletrac, operating in only 6 markets. However, expansion of this service, as proposed, combined with deployment of new technologies using much higher power, such as Pinpoint Communications' "Array" system, could be very damaging to Itron.

Pinpoint's system is high power, high density, and of extremely wide bandwidth relative to the other multilateration systems.[3] As such, it can "drown out" Part 15 devices, which are limited to one watt power. Its base station transmissions have an ERP of 500 watts, spread over 16 MHz (currently centered at 920 MHz). Furthermore, the stations are to be configured in a grid with 5-7 mile separation, which means that, even though each base station has a duty cycle of approximately 3%, the combined effect is to present an essentially constant signal at any particular geographic location.

One way to prevent the deleterious effects that Pinpoint could produce is to prohibit wideband forward links (in contrast to Pinpoint's 16 MHz forward link, other multilateration systems, such as Teletrac's, use just 25 kHz). This limitation would not effect the location function of the system, because it is used just as a paging channel, and would be a much more efficient use of spectrum.

Itron further recommends moving the narrowband forward links for multilateration systems out of their 6 MHz band to be grouped at the top of the band—927.5-928 MHz. Because of the high power paging operations just above 928 MHz, Part 15 devices have likely already added filters as necessary for the upper portion of the band, so this would be the easiest place in the band for them to accommodate the forward links. A forward link operating at the top of the 904-910 MHz band, or at the bottom of the 920-926 MHz band, could require additional separate filters for Part 15 devices, each one of which causes signal loss to the Part 15 device. For example, in

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[3] Itron's analysis of the Pinpoint system is based upon both discussions with Pinpoint representatives and Pinpoint's own filings. A more extensive and reliable evaluation of Pinpoint's impact on Part 15 devices can only come from the sort of controlled testing that Itron and other parties in this proceeding have long advocated.

order for Itron to operate from 910-920 MHz, its receivers may "listen" from 908 MHz to 922 MHz, which could pick up a higher-power forward link operating there.[4]

Additionally, two options that are being considered by the staff should be rejected in order to minimize the potential for a new source of destructive interference. These two options are that multilateration systems be allowed to operate in the 910-920 MHz band, on a secondary basis to non-multilateration systems. This, combined with the two 6-MHz bands for multilateration systems on either side, would allow a multilateration system to occupy 22 MHz in the middle of the band—more than enough to accommodate Pinpoint's dangerous 16 MHz wide forward link. The fact that the multilateration use of the 910-920 MHz band is proposed to be on a "co-equal " basis to Part 15 use is of no avail—there is nothing "co-equal about 500 watts compared to Part 15's 1 watt (or Itron's one quarter milliwatt).

The second option, to make the two 6-MHz multilateration bands contiguous at the top end of the band, likely ranging from 914-926 MHz, is similarly detrimental to Itron's use of the band, as it would allow a Pinpoint-type system to extend over 12-MHz, reaching into the middle of the band in which millions of Itron's installed meter readers already operate.

In short, the significant unaddressed problem of interference to Part 15 use, likely rendering millions of Part 15 devices inoperative, would be compounded by either of the alternative "options" to the FCC staff's band segmentation plan.

Enforcement of Proposed Interference Thresholds

Although Itron's system would not be affected by any of the three proposed Part 15 interference thresholds, it believes that method of attempting to manage interference would be impossible to enforce in the manner intended, and thus creates the potential for deleterious effects to all Part 15 systems. In particular, the criterion of spread spectrum devices under § 15.247 with greater than 6 dBw EIRP could define a large group of devices operating in a given geographic area. Since it would be impossible for an LMS system to determine which devices were causing the

[4] The FCC may also want to consider designating power limits and transmission limits for the reverse, i.e., mobile, links that permit the multilateration system to operate, but not unduly effect Part 15 use. These might be on the order of 10 watts, and a half-second every five minutes.

interference, or it might be the case that the aggregation of various devices was causing the interference, how would it be determined which devices must shut down, and who would make that determination? The likelihood is that whole classes of devices would be forced to turn off, rather than just the offending signal. This creates a due process and equity hardship for Part 15 devices, as well as an administrative nightmare for the Commission, and likely the LMS systems themselves.

Conclusion

Just three days ago, the Commission noted with justified pride its efforts with regard to unlicensed Part 15 use, stating "Our attempts to encourage this development have been successful and today millions of Part 15 spread spectrum devices provide a wide variety of communications services as well as services such as automated meter reading, inventory control, package tracking and shipping control, alarm devices, local area networks, and cordless phones," the majority of which operate in the 902-928 MHz band. See Report to Ronald H. Brown, Secretary, U.S. Department of Commerce, Regarding the Preliminary Spectrum Reallocation Report (Aug. 9, 1994) at ¶ 13. NTIA agreed that "there is very efficient use of this band." Id. at fn. 76. In discussing the 2400 MHz Part 15 band, the Report continues "installing a licensed service in this band may result in a loss to the public of Part 15 spread spectrum communications equipment." Id at ¶ 50. This concern is even more valid with regard to the 902-928 MHz band, because there are many more Part 15 devices operating today in this band. The Commission should heed its own advice about the folly of trying to authorize a licensed service where Part 15 use is already widespread.

The FCC should not take action now, in favor of as yet undeployed, unproven technologies, that would sacrifice the demonstrable success it has had with Part 15 use of this band.

Sincerely,

Henrietta Wright
Attorney for Itron, Inc.

cc: Mr. Richard G. Geiger
Itron, Inc.